

The nest of the Rainbow Star-frontlet, *Coeligena iris*

by *Fernando Ortiz-Crespo*

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On 16 April 1999 I visited a new visitor trail surrounding Laguna de Llaviuco (approx. 2°50'S, 74°08'W), a c. 16 ha Andean lake situated at the eastern foot of the Cajas Mountains at 3,100 m, and 17 road km northwest of Cuenca in southern Ecuador. Paul Turcotte, a resident of Cuenca informed me of a nest of an unidentified hummingbird he had found on the trail one week earlier.

The section of the trail where the nest was located resembled a "covered bridge", with a wooden frame supporting a walking surface of transverse poles shielded from the rain by a thatched roof. The fairly conspicuous nest was placed c. 70 cm below the roof and was attached to the only living branch found under it, since the vegetation had been trimmed when the trail was laid. As we approached, a hummingbird flew off the nest and perched some 25 m away, between the trail and the lake.

The nest was an open cup-like structure with a nearly circular rim 7.5 cm in diameter and with convex sides 6–8 cm high. The outer walls of the nest were built with green moss strands. The cavity, c.4 cm deep, had two white eggs that rested on a dense, reddish brown lining. This material extended up to the nest rim, where it showed as a conspicuous dark ring against the bright green of the mossy walls. The nest was placed 2 m above the trail at the end of a living branch of an *Oreopanax avicennifolius* sapling, being anchored to the leafy tip of the branch which was woven into the base of the nest with moss strands. The lower edges of the walls were festooned with loose green moss filaments (Plate 1).

When the bird returned, it proved to be a Rainbow Star-frontlet, *Coeligena iris hesperus*, a species in which the sexes are nearly monomorphic. Not wishing to disturb it any longer, we walked away.

I have also examined a nest photographed (Plate 1B) and preserved by a local ornithologist, Fabián Rodas. This nest was collected at Llaviuco on 5 February 1998, and was almost identical to the one previously described (it reportedly had two eggs that broke after falling during heavy rain), except that it was conical and attached to a thin branch along the side. Its outer portion was made of woven moss filaments and the cavity was lined with a thick layer of brownish red plant hairs. A sample taken from this nest was analyzed at the Herbarium of Quito's Pontificia Universidad Católica by Hugo Navarrete, a fern specialist, who tentatively identified the brownish red material as *Lophosoria quadripinnata* var. *contracta* (Hieron.) R. & A. Tryon. Tryon & Stolze (1989: 108) state that the form *contracta* is restricted to the subparamo of southern Ecuador and northern Peru.

Two points are worth emphasizing regarding the nest lining. The first is that fern trichomes consist of the walls of dead cylindrical cells, growing in uniseriate columns,

and thus amount to minute, chambered hollow tubes which presumably provide efficient thermal insulation. The second is that the colour of the trichomes resembles that of the reddish wing and tail feathers of this form of Star-frontlet, so that an individual sitting on eggs or nestlings might appear more cryptic to diurnal predators.

Unlike most hummingbird nests described in the literature, the walls and anchorage of these nests were not held together or braced with cobwebs. Perhaps moist moss strands are sufficiently pliable to be woven into a stable and elastic structure. If so, rainy weather might be favoured for nesting since moisture would tend to favour the seasonal growth of epiphytic and ground mosses. April and May are the wettest months of the year at Llaviuco. Therefore, if this record is typical, this hummingbird may indeed breed in the wetter months of the year, unlike trochilids in inter-Andean northern Ecuador that nest in October–January, prior to the main rainy season. Fjelds  & Krabbe (1990: 266) state that the Rainbow Star-frontlet breeds "November–January", but these authors provide no further details nor references to published descriptions of nesting by any species of *Coeligena*. However, neither of them recalled that a published account exists for the nest of this or any other Star-frontlet (Fjelds  & Krabbe, pers. comm., 1999). A brief description in a local field guide states that "[two nests of this species] were built of green moss on the outside and had an inner lining of brown vegetable fibres, being shaped as open cups 8–10 cm high, 6–8 cm wide in the outside and 1.5–3 cm deep" (Toral 1996: 42; my translation).

Laguna de Llaviuco, known locally as Surocucho, is the hub of the 1,500 ha reserve owned and managed by Cuenca's potable water company, ETAPA. The lake is surrounded by Andean forest remnants, pastures and paramo areas that merge with the larger Cajas Reserve. The Andean forest here is made up of an array of trees and tall shrubs (*Prumnopitys montana*, *Ocotea heterochroma*, *Oreopanax* spp., *Hedyosmum* spp., *Weinmannia fagaroides*, *Vallea stipularis*, *Oreocallis grandiflora*, *Miconia pustulata*), smaller shrubby plants (*Macleania rupestris*, *Gaultheria* spp., *Salvia hirta*, *S. corrugata*, *Fuchsia loxensis*) and orchids and epiphytic and terrestrial bromeliads, with emergent *Scirpus californicus* reed stands near the lake's edges. Mosses carpet the forest floor and the trunks of the larger shrubs and trees, and ferns are common in the understorey. An open, flat marsh lies to the west of the lake. Introduced eucalyptus *Eucalyptus globulus* and Monterey cypresses *Cupressus macrocarpa* grow on the slopes. At the time of our visit the most profusely flowered nectar source was *Fuchsia loxensis*, but we did not see the nesting hummingbird feed there. However, these hummingbirds have been recorded visiting the flowers of this plant (Rio Mazan Reserve Management Plan, King 1989), and those of the Proteaceous shrub *Oreocalyx grandiflorum* (pers. obs.).

This trochilid is an Andean endemic, with the subspecies *hesperus* restricted to the Cuenca basin and neighbouring areas from southernmost Ca ar province just northeast of Cuenca (Hacienda La Libertad, c.2°32'S, 78°40'W, R. S. Ridgely's letter to S. White, 1991) to a few km south of Cuenca, being replaced further south by the nominate race in Loja province in extreme southern Ecuador, and by the races *aurora*, *hypocrita* and other doubtfully valid ones in northern Peru (Peters 1968: 102–103).

A



B



Plate 1. A. Active nest of *Coeligena iris hesperus*, Llaviuco, 16 April 1999. Photo by Paul Turcotte. B. A nest of *Coeligena iris hesperus* collected at Llaviuco on 5 February 1998 and later preserved. Photo by Fabián Rodas.

No other *Coeligena* species is found in Llaviuco, but further south the Rainbow and the Buff-winged Star-frontlet *Coeligena lutetiae* seem to replace each other altitudinally, the latter being found at higher elevations (Bloch *et al.* 1991: 103). Peters's habitat description for *C. i. hesperus*, "arid temperate zone", seems misleading since the Llaviuco area gets well over 1,000 mm of rain per year (P. Turcotte, pers. comm.). In my experience this Star-frontlet, like its congeners, is never found away from moist areas with a cover of native trees or shrubs. It is certainly not found within the Cuenca city limits nor in the hills surrounding that city, where it is drier and native vegetation has been largely replaced with exotic plants. Parker *et al.* (1982: 46) state that this Star-frontlet occurs in "humid subtropical and temperate" habitats in northern Peru, which seems a more typical situation.

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Address: Ap. 17-12-792, Quito, Ecuador (e-mail: fortiz@fundacyt.org.ec)